No. 610,873. Patented Sept. 13, 1898.

J. COLLIS.

VALVE.

(Application filed July 12, 1897.)

(No Model.)

Fig. 1.

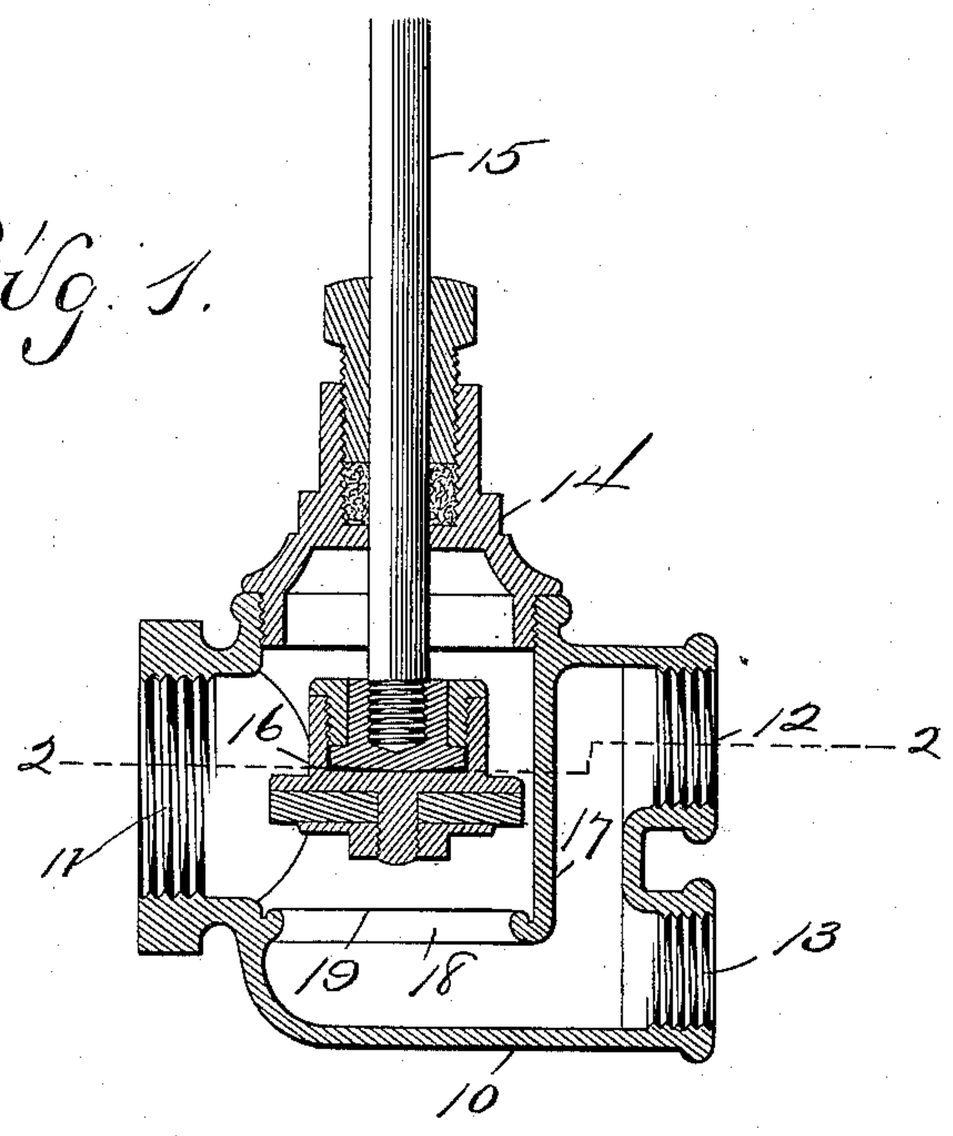
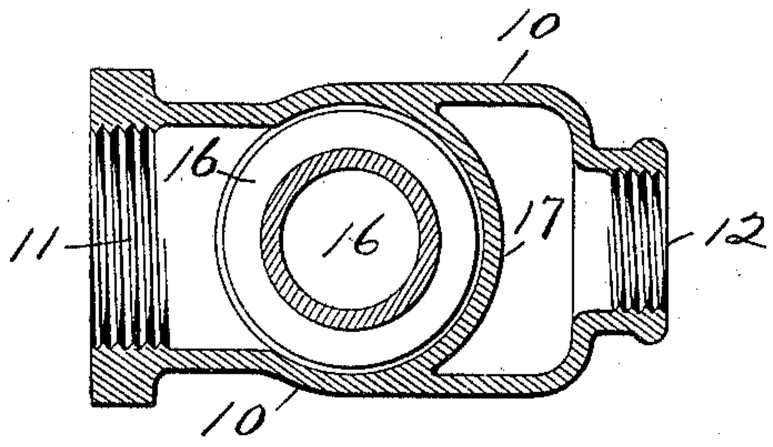


Fig. 2.



Witnesses:
W. J. Dankey.
R. F. Orwig.

Inventor: John Collis,
By Thomas G. and J. Ralph Orwig,
Attorneys.

UNITED STATES PATENT OFFICE.

JOHN COLLIS, OF DES MOINES, IOWA.

VALVE.

SPECIFICATION forming part of Letters Patent No. 610,873, dated September 13, 1898.

Application filed July 12, 1897. Serial No. 644,186. (No model.)

To all whom it may concern:

Be it known that I, JOHN COLLIS, a citizen of the United States, residing at Des Moines, in the county of Polk and State of Iowa, have invented a new and useful Valve, of which the following is a specification.

My invention relates to that class of valves for radiators in steam-heating systems for cutting off steam from the radiators and maintaining circulation at the same time, as set forth in Patent No. 479,400, granted to me July 26, 1892. In said patent the valve-seat extends vertically and is subject to an objectionable amount of friction in its sliding motions; and my object is to adapt a valve to operate with a minimum friction, so it may be automatically actuated by means of a thermostat and in the plane of the return-pipe in the circulating system, so that the supply may be cut off from one or more radiators (or all) while circulation is maintained between the generator and a plurality of other radiators in the plant and system.

The circulating-valve hereinafter described is obviously capable of performing all of the useful functions set forth in my said former patent and is particularly and specifically adapted for use in connection with a thermostatic regulator, whereby the valve may be opened or closed automatically, my object being more specifically to provide a circulating-valve capable of being opened or closed by means of a slight vertical movement, such as the ordinary thermostatic regulator now in common use is capable of imparting to the valve connected therewith, it being understood that the valve of the said former device must be moved a comparatively great distance vertically in order to open or close the valve device.

My invention consists in certain details in the construction, arrangement, and combination of the various parts of the device, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which—

Figure 1 shows a vertical sectional view of the complete circulating-valve. Fig. 2 shows a horizontal sectional view through the line 2 2 of Fig. 1.

Referring to the accompanying drawings, the reference-numeral 10 is used to indicate the pipe-coupling or valve-chamber. It is provided at one end with a screw-threaded opening 11, designed to receive the pipe which communicates direct with the radiator. At the other end of the chamber is a screw-threaded opening 12 near the top and a similar opening 13 near the bottom. These openings 12 and 13 are designed to receive, respectively, the inflow and outflow pipes when connected with the supply-pipe and generator. At the top of the chamber is a branch and a stuffing-box 14, and a valve-rod 15 is mounted in this branch and box for longitudinal movement. Fixed to the lower end of the valve-stem 16 is a disk valve of common construction.

The reference-numeral 17 is used to indicate a partition. This partition extends from a point at the top of the interior of the chamber near the end where the openings 12 and 13 are located, then transversely to a point near the bottom, and from thence it extends horizontally to the opposite side of the chamber in a plane below the opening 11, so that the water of condensation in the radiator can flow therefrom into the valve-chamber and flow readily from the valve-chamber through the outflow-opening and a pipe connected therewith as required to facilitate draining the radiator and maintaining a circulation of steam. In this horizontally-extending part of the partition is a circular opening 18, provided at its top with a valve-seat designed to receive the disk valve 16.

In practical use, and assuming that the chamber is connected with the inflow and outflow pipes leading to the supply-pipe and generator, and assuming, further, that a thermostatic regulator is attached to the top of the valve-stem 15 and so adjusted as to move the valve-stem and valve vertically upon the variation in temperature of the room in which the device is placed, it is obvious that when the valve-stem 15 is moved downwardly so that the valve 16 is seated upon the valve-seat the water or steam may freely circulate through the inflow and outflow openings 12 and 13, and, further, when the valve-stem 15 is drawn upwardly the water or steam may readily pass through the opening 11, and thus circulate through the radiator to which the circulating-valve is attached.

It is obvious that by reason of this construction of the valve and chamber a very slight vertical movement of the valve relative to its seat will be sufficient to establish or cut off the circulation of water or steam through the opening 18.

Having thus described my invention, what I claim as new and advantageous, and desire to secure by Letters Patent of the United States therefor, is—

1. A pipe-coupling and valve-chamber having one end adapted to be connected with a radiator and at its other end provided with an inflow and an outflow opening, one adapted to be connected with a supply-pipe and the other with a return-pipe, a partition extending transversely of the shell near the end and extended at right angles to the opposite side of the chamber in a plane below the opening leading to a radiator and provided with a circular opening adapted to serve as a valve-seat in the plane of the outflow-opening and said partition so arranged as to separate the opening which leads to the radiator from the said inflow and outflow openings, a disk valve arranged to engage the said partition and valve-seat, and a valve-stem mounted for longitudinal movement in the valve-chamber and attached to the said disk valve, all arranged and combined substantially in the manner set forth and for the purposes stated.

2. A circulatory valve, comprising in combination, a pipe-coupling and valve, a chamber 10, having a screw-threaded opening 11 at one end thereof, and also having inflow and outflow openings 12 and 13 at the opposite end thereof, a stuffing-box 14 in a branch at the top of the shell, a valve-stem 15 mounted in the said branch and stuffing-box for longitudinal movement, a disk valve 16 on the said valve-stem, a partition 17 below the opening 11 having an opening 18 therein in the plane of the outflow-opening within the chamber and adapted to serve as a valve-seat, all arranged and combined substantially in the manner set forth, and for the purposes stated.

JOHN COLLIS.

Witnesses:
J. RALPH ORWIG,
THOMAS G. ORWIG.